

# Talking Paper on Machine Guarding

## 1) Over a 5-year period; there were 32 mishaps reported relating to Machine Guarding (FY11 - FY15).

While this isn't seemingly a large number, review the costs incurred for these mishaps.

### ***Amputation (Perm Partial Disability)***

Using Table Saw to Cut Wood; Severed Four Finger		\$115,000
Using Metal Shear Machine; Crushed Fingertip (Bone Loss)		\$115,000
Sanding Aluminum By Hand with Lathe; Amputated Right Thumb		<u>\$762,008</u>
	<b>Cost</b>	<b>\$992,008</b>

### ***Lacerations***

Worker Preparing Cutting Table; Lacerated Finger	14 Lost Work Days	\$2,040
Worker Placed Left Hand under Machine Guard; Lacerated Finger	14 Restricted	\$1,680
Using Mechanical Shears caught Hand; Lacerated Finger	21 Restricted	\$2,530
Using Table Saw; Contacted Blade; Lacerated Fingers	39 Lost Work Days	\$14,625
Using Band Saw, Adjusting Band; Laceration	11 Restricted	\$1,320
Cutting Sheet Metal; Lacerated Index Finger	No Lost Work Day	\$120
Using Shear to Cut Metal; Lacerated Finger	7 LWD, 159 Restricted	\$21,530
Using Miter Saw; Guard Failure; Lacerated Fingers	21 Lost Work Days	\$7,875
Using Mechanical Shears; Smashed/Lacerated Fingers	5 Lost Work Days	\$6,550
Using Band Saw Cutting Wood; Lacerated Finger	No Lost Work Day	\$120
Using Band Saw Cutting Aluminum; Lacerated Finger	8 Lost Work Days	\$24,940
Using Metal Shear Cutting Metal Strips; Lacerated Thumb	28 Restricted	\$3,360
Using Planer Cutting Wood; Lacerated Fingers	1 Lost Work Days	\$375
Using Metal Shear to Cut Metal Piece; Lacerated Finger	10 Restricted	\$1,200
Using Pneumatic Cable Swaging Machine Lacerated Finger	No Lost Work Days	\$1,300
Using Hydraulic Shear to Cut Sheet Metal; Lacerated Finger	22 Lost Work Days	<u>\$8,250</u>
	<b>Cost</b>	<b>\$97,815</b>

### ***Fracture:***

Adjusting Milling Machine; Fractured Thumb	31 LWD, 149 Restricted	\$75,700
Using Hydraulic Press; Smashed/Fractured Finger	8 Lost Work Days	\$2,710
Using Shear to Cut Metal; Fractured Ring Finger	3 Days Quarters	<u>\$1,125</u>
	<b>Cost</b>	<b>\$79,535</b>

### ***Crush/Contusion***

Using Pin Setter; Crushed Right Index Finger;	No Lost Work Days	\$120
Cutting Sheet Metal w/Shear; Crushed Middle Finger	7 Lost Work Days	\$18,100
Using Shear Cutting Metal; Crushed Fingers	30 LWD, 42 Restricted	\$73,300
Using Powered Metal Shear; Crushed Finger; Tip Removed	23 Lost Work Days	\$9,825
Using Balancing Machine Closing Guard; Hand Contusion	No Lost Work Days	\$120
Using Table Saw Lacerated Hand;	33 Lost Work Days	\$4,650
Arrest System Inspection; caught Between Chain/Gear; Multi Foot	18 Lost Work Days	<u>\$49,500</u>
	<b>Cost</b>	<b>\$155,615</b>

**Grand Total     \$1,234,973**

**2) Reference:** AFI 91-203, Chapter 18 *Machinery*; 29 CFR 1910 Subpart O, *Machinery and Machine Guarding*, and the National Safety Council (NSC) *Accident Prevention Manual for Industrial Operations*.

**3) Injury/death/equipment damage prevention bullet points, as necessary to support the topic**

OSHA QuickTakes <https://www.osha.gov/SLTC/etools/machineguarding/index.html>

This eTool focuses on recognizing and controlling common hazards associated with the operation and use of certain types of machines. “Employee exposure to unguarded or inadequately guarded machines is prevalent in many workplaces. Consequently, workers who operate and maintain machinery suffer approximately 18,000 amputations, lacerations, crushing injuries, abrasions, and over 800 deaths per year. Amputation is one of the most severe and crippling types of injuries in the occupational workplace, and often results in permanent disability.”

**4) Possible impact of waiting to report a problem (i.e., can the problem cause a mishap/damage equipment even if one has not occurred, etc.).**

Mishap Prevention does not allow us to wait to report a hazardous situation or unsafe work related condition. Relevant OSHA website <https://www.osha.gov/SLTC/etools/machineguarding/intro.html>.

All machines consist of three fundamental areas: the [point of operation](#), the [power transmission device](#), and the [operating controls](#). Despite all machines having the same basic components, their safeguarding needs widely differ due to varying physical characteristics and operator involvement. The following addresses the general requirements for machinery set forth by OSHA, the motions and actions that contribute to different machine hazards, and additional considerations that entail overall machine and operator safety:

- [General Requirements](#)
- [Hazardous Motions and Actions](#)
- [Additional Safety Considerations](#)

**Safeguards**

- [Guards](#): provide physical barriers to hazardous areas. They should be secure and strong, and workers should not be able to bypass, remove, or tamper with them. Guards should not obstruct the operator’s view or prevent others from working.
- [Devices](#): help prevent contact with points of operation and may replace or supplement guards. Devices can interrupt the normal cycle of the machine when the operator’s hands are at the point of operation.

**Point of Operation**

The point of operation is where work is performed on the material, such as cutting, shaping, boring, or forming of stock.

**Power Transmission Device**

The power transmission apparatus is all components of the mechanical system which transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.

## **Operating Controls**

A mechanical or electrical power control shall be provided on each machine to make it possible for the operator to cut off the power from each machine without leaving his position at the point of operation

**Final Thoughts:** Not reporting known hazardous conditions can result in an OSHA visit due to amputation or a fatality. A Florida manufacturer was recently cited for “Willful” violations following a fatality. The OSHA Regional News Release can be found on the U.S. Department of Labor Office of Public Affairs: <https://www.dol.gov/newsroom/releases/osha/osha20140163>